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Corvallis Environmental Research Lab, Oreg

Prepared for

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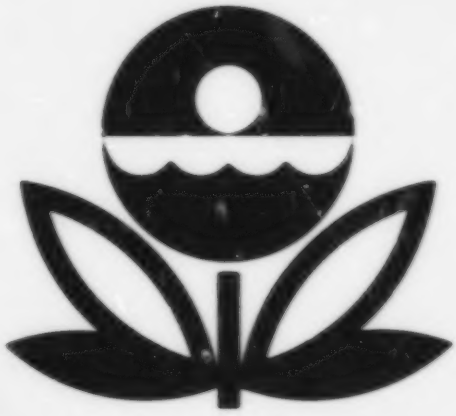
U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY

WORKING PAPER SERIES



CORVALLIS ENVIRONMENTAL RESEARCH LABORATORY - CORVALLIS, OREGON

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REPORT

ON

LAKE WYLIE

YORK COUNTY, SOUTH CAROLINA;
AND
GASTON AND MECKLENBURG COUNTIES,
NORTH CAROLINA

EPA REGION IV

WORKING PAPER No. 441

WITH THE COOPERATION OF THE

SOUTH CAROLINA DEPARTMENT OF HEALTH AND

ENVIRONMENTAL CONTROL

AND THE

SOUTH CAROLINA NATIONAL GUARD

JUNE, 1975

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the South Carolina Department of Health and Environmental Control for professional involvement, to the South Carolina National Guard for conducting the tributary sampling phase of the Survey, and to those South Carolina wastewater treatment plant operators who voluntarily provided effluent samples and flow data.

The staff of the South Carolina Bureau of Wastewater and Stream Quality Control provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

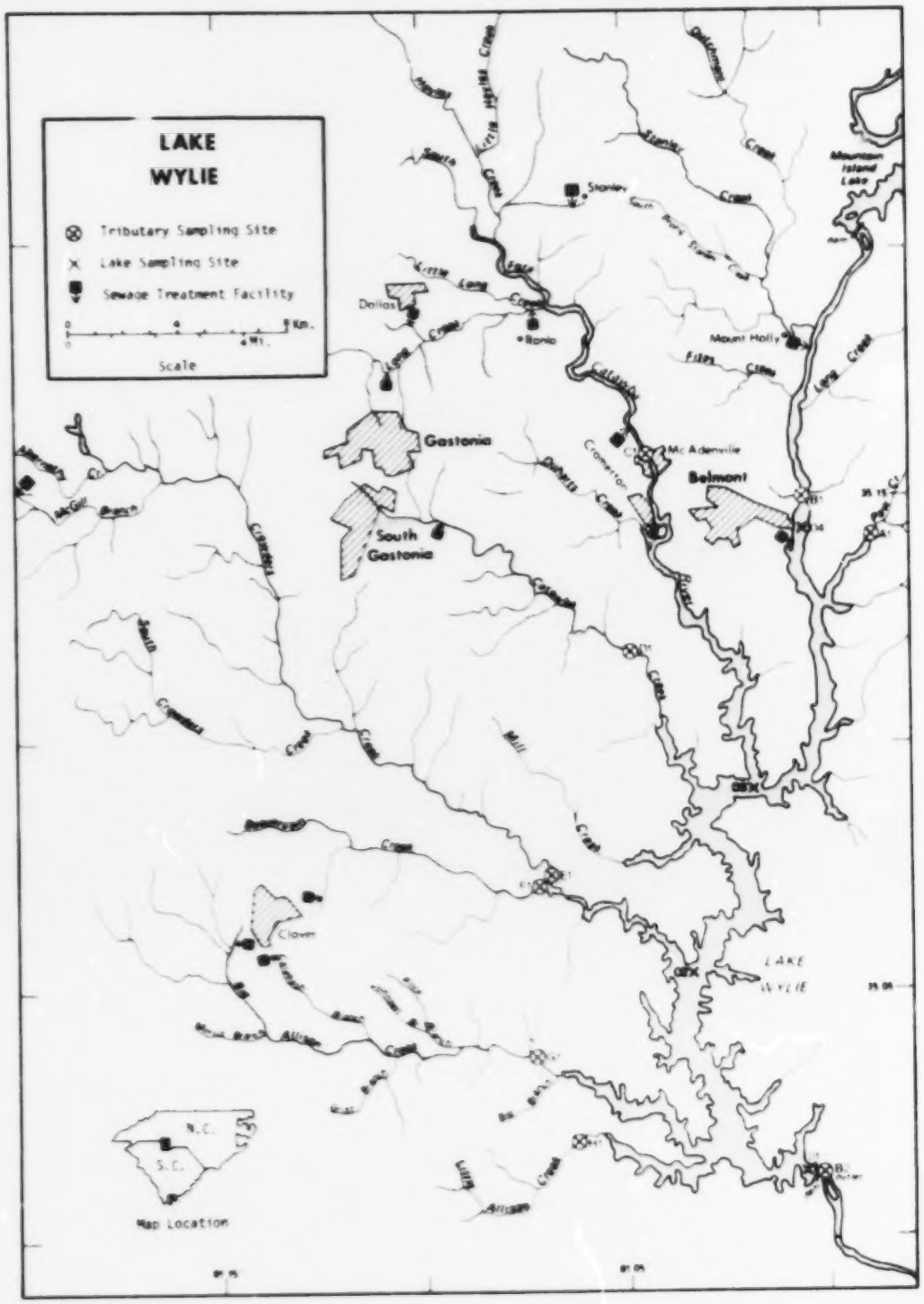
Major General Robert L. McCrady, the Adjutant General of South Carolina, and Project Officer Lt. Colonel John P. DuPre (Retired), who directed the volunteer efforts of the South Carolina National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

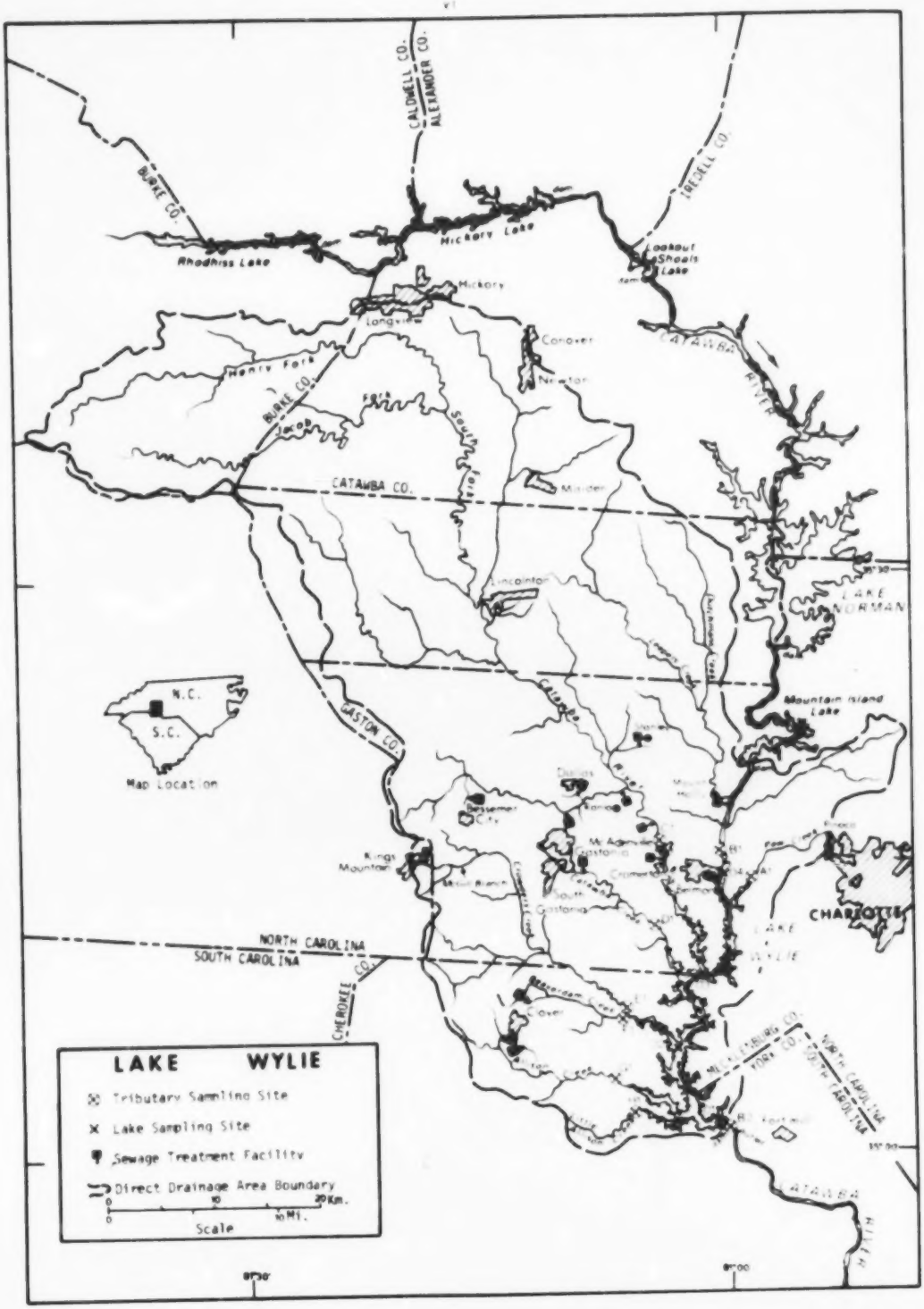
NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF SOUTH CAROLINA

NAME	COUNTY
Clark Hill	Abbeville, McCormick, SC; Columbia, Elbert, Lincoln, McDuffie, Wilks, GA
Fishing Creek	Chester, Lancaster
Greenwood	Greenwood, Laurens, Newberry
Hartwell	Anderson, Oconee, Pickens, SC; Franklin, Hart, Stephens, GA
Keowee	Oconee, Pickens
Marion	Berkeley, Calhoun, Claredon, Orangeburg, Sumter
Moultrie	Berkeley
Murray	Lexington, Newberry, Richland, Saluda
Robinson	Chesterfield, Darlington
Saluda	Greenville, Pickens
Secession	Abbeville, Anderson
Wateree	Fairfield, Kershaw, Lancaster
William C. Bowen	Spartanburg
Wylie	York, SC; Gaston, Mecklenburg, NC


LAKE
WYLIE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Scale
Gastonia
South Gastonia
Belmont
Mount Holly
Dallas
Clover
LAKE WYLIE
N.C.
S.C.
Map Location


CALDWELL CO.
ALEXANDER CO.
BURKE CO.
IREDELL CO.
Rhodhiss Lake
Hickory Lake
Lookout Shoals Lake
Hickory
Conover
Newton
Henry Fork
South Fork
CATAWBA CO.
Maiden
Lincolnton
LAKE NORMAN
Mountain Island Lake
GASTON CO.
N.C.
S.C.
Map Location
Gastonia
Kings Mountain
CHARLOTTE
LAKE WYLIE
NORTH CAROLINA
SOUTH CAROLINA
CHEROKEE CO.
YORK CO.
LAKE WYLIE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Direct Drainage Area Boundary
0 10 20Km.
0 10Mi.
Scale

LAKE WYLIE

STORET NO. 4511

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate Lake Wylie is eutrophic. It ranked eighth in overall trophic quality when the 13 South Carolina lakes sampled in 1973 were compared using a combination of six parameters*. Six of the lakes had less median total phosphorus, nine had less and one had the same median dissolved phosphorus, seven had less median inorganic nitrogen, four had less mean chlorophyll a, and eight had greater mean Secchi disc transparency. Marked depression of dissolved oxygen with depth occurred at stations 1, 2, and 3 in July.

Survey limnologists did not observe any nuisance conditions during sampling visits.

B. Rate-Limiting Nutrient:

The algal assay results are not representative of conditions in the lake because of a significant change in nutrients in the sample from the time of collection to the beginning of the assay. However, the lake data indicate phosphorus limitation at all sampling times.

C. Nutrient Controllability:

1. Point sources--The phosphorus contributions of listed

---

* See Appendix A.

point sources amounted to 39.5% of the total load reaching Lake Wylie during the sampling year. The two Gastonia, NC, plants collectively contributed 18.6%; Belmont, NC, 8.4%; Kings Mountain, NC, 5.1%; and the remaining ten plants collectively contributed 7.3% of the total load.

The total phosphorus loading of 8.38 g/m^2 measured during the sampling year is over five times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic loading (see page 17). Even complete removal of phosphorus at the listed point sources would still leave a loading of about 5 $g/m^2/yr$. However, there are additional point sources beyond the 40-kilometer limit of the Survey* that contribute significantly to the phosphorus load as indicated by the high export rates of some of the tributaries (see page 16).

Six additional North Carolina municipal wastewater treatment plants discharge in the upper portion of the South Fork Catawba River and contribute to the high export rate of that stream. These include Conover (S.W. plant), Hickory (S.E. plant), Lincolnton, Longview, Maiden, and Newton with a combined population equivalence of 25,250 (Anonymous, 1971). Also, six unsampled point sources with a combined design flow of 2,270 m^3/day discharge to Paw Creek (Taylor, 1976) and contribute to the very high phosphorus export rate of that stream.

* See Working Paper No. 175, "...Survey Methods, 1973-1976".

Many municipal point sources also discharge to the Catawba River upstream from Lake Wylie. However, these sources probably contribute minimal amounts of phosphorus indirectly to Lake Wylie because of nutrient entrapment in the intervening reservoirs. For example, five communities contributed about 9% of the total phosphorus load to Lake Norman* during the sampling year. However, almost 68% of that phosphorus was retained in Lake Norman, and 24% of the phosphorus leaving that lake was retained in Mountain Island Lake** (see map, page vi). Such entrapment is believed to account for the low phosphorus export rate of the Catawba River at station B-1 (12 $kg/km^2/yr$).

As noted before, even if complete removal of phosphorus could be accomplished at the listed point sources, the remaining loading would still be about three times the eutrophic loading. However, considering all of the point sources impacting Lake Wylie and the persistent phosphorus limitation of primary productivity in the lake, it is likely that a high degree of phosphorus control at all point sources would result in an improvement in the trophic condition of Lake Wylie, particularly if a significant portion of the "non-point" phosphorus load discussed below proves to be controllable. The reduction of point-source phosphorus loads probably would benefit downstream Fishing Creek Reservoir*** as well.

* Working Paper No. 387.
** Working Paper No. 386.
*** Working Paper No. 430.

2. Non-point sources--It is calculated that non-point sources contributed about 60% of the total phosphorus load to Lake Wylie during the sampling year. However, the high phosphorus export rates of the South Fork Catawba River (106 kg/km^2), Catawba Creek (142 kg/km^2), and Paw Creek (301 kg/km^2) indicate that phosphorus loads from unaccounted-for point sources and/or urban drainage significantly impacted those streams during the sampling year.

Assuming that the mean of the phosphorus export rates of the Catawba River, Beaverdam Creek, Allison Creek, and Little Allison Creek is a typical non-point export rate for the Lake Wylie drainage (i.e., 18 kg P/km^2/yr; see page 16), it is calculated that point and/or urban sources contributed an additional 144,275 kg P to the South Fork Catawba River and 8,670 kg P to Catawba Creek, and the six unsampled point sources contributed 9,960 kg P to Paw Creek. The addition of these apparent point-source loads to those listed herein would increase the point-source proportion of the total load from about 40% to 76%.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Lake Morphometry††:

1. Surface area: 53.10 kilometers^2.
2. Mean depth: 7.0 meters.
3. Maximum depth: 28.4 meters.
4. Volume: 371.672 x 10^6 m^3.
5. Mean hydraulic retention time: 39 days.

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Catawba River	5,309.5	76.47
S. Fk. Catawba River	1,639.5	22.55
Catawba Creek	69.9	0.95
Crowders Creek	282.3	3.84
Beaverdam Creek	49.2	0.67
Paw Creek	35.2	0.47
Allison Creek	113.7	1.54
Little Allison Creek	27.2	0.37
Minor tributaries & immediate drainage -	242.2	3.33
Totals	7,768.7	110.19

2. Outlet -

Catawba River	7,821.8**	110.19

C. Precipitation***:

1. Year of sampling: 124.6 centimeters.
2. Mean annual: 111.0 centimeters.

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† Table of metric conversions--Appendix B.
†† Mast, 1974.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Includes area of lake.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

Lake Wylie was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a number of depths at four stations on the lake (see map, page v). During each visit, a single depth-integrated (4.6 m or near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 18.0 meters at station 1, 11.6 meters at station 2, 11.3 meters at station 3, and 5.8 meters at station 4.

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR LAKE WYLIE
STORET CODE 4511

PARAMETER	1ST SAMPLING (3/28/73) 3 SITES RANGE	MEAN	MEDIAN	2ND SAMPLING (7/12/73) 3 SITES RANGE	MEAN	MEDIAN	3RD SAMPLING (9/20/73) 3 SITES RANGE	MEAN	MEDIAN
TEMP (C)	12.2 - 18.3	13.4	13.2	24.4 - 32.5	28.1	28.3	24.9 - 28.9	26.8	26.8
DISS OXY (MG/L)	8.5 - 9.7	9.3	9.2	0.2 - 8.6	4.1	4.2	3.4 - 6.8	5.5	5.6
CNDCTVY (MCROMO)	65. - 90.	78.	78.	61. - 110.	78.	74.	70. - 105.	79.	73.
PH (STAND UNITS)	6.8 - 7.5	7.4	7.5	6.4 - 8.3	6.8	6.6	6.3 - 6.5	6.5	6.5
TOT ALK (MG/L)	11. - 16.	14.	14.	18. - 28.	21.	20.	11. - 16.	13.	13.
TOT P (MG/L)	0.043 - 0.120	0.063	0.058	0.020 - 0.067	0.038	0.033	0.022 - 0.045	0.031	0.032
ORTHO P (MG/L)	0.013 - 0.051	0.021	0.017	0.003 - 0.014	0.006	0.006	0.009 - 0.022	0.013	0.012
NO2+NO3 (MG/L)	0.300 - 0.440	0.344	0.340	0.070 - 0.290	0.165	0.150	0.040 - 0.130	0.074	0.050
AMMONIA (MG/L)	0.080 - 0.170	0.106	0.110	0.090 - 0.450	0.209	0.160	0.060 - 0.190	0.099	0.100
KJEL N (MG/L)	0.200 - 0.500	0.312	0.300	0.200 - 1.700	0.513	0.300	0.400 - 0.700	0.582	0.600
INORG N (MG/L)	0.380 - 0.610	0.449	0.450	0.160 - 0.740	0.375	0.310	0.110 - 0.260	0.173	0.150
TOTAL N (MG/L)	0.500 - 0.860	0.655	0.640	0.300 - 1.790	0.679	0.500	0.450 - 0.750	0.655	0.650
CHLRPYL A (UG/L)	2.5 - 9.3	5.3	4.0	5.7 - 6.2	5.9	5.7	4.7 - 5.7	5.1	5.0
SECCHI (METERS)	0.3 - 0.6	0.4	0.4	0.9 - 1.4	1.2	1.3	1.2 - 1.4	1.3	1.2

B. Biological Characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
03/28/73	1. Flagellates	1,332
	2. *Melosira sp.*	679
	3. *Synedra sp.*	366
	4. *Cyclotella sp.*	314
	5. *Dactyloccopsis sp.*	131
	Other genera	339
	Total	3,161
07/12/73	1. *Melosira sp.*	1,254
	2. *Cyclotella sp.*	874
	3. *Cryptomonas sp.*	608
	4. Flagellates	608
	5. Dinoflagellates	266
	Other genera	1,027
	Total	4,637
09/20/73	1. *Anabaena sp.*	132
	2. Centric diatoms	119
	3. *Cryptomonas sp.*	105
	4. *Scenedesmus sp.*	92
	5. *Chlorella sp.*	79
	Other genera	474
	Total	1,001

2. Chlorophyll *a* -

Sampling Date	Station Number	Chlorophyll *a* (µg/l)
03/28/73	1	2.5
	2	9.3
	3	4.0
	4	-
07/12/73	1	5.7
	2	6.2
	3	5.7
	4	3.3
09/20/73	1	4.7
	2	5.0
	3	5.7
	4	3.2

C. Limiting Nutrient Study:

The algal assay results are not considered representative of conditions in the lake because of a 60% loss of phosphorus in the sample between the time of collection and the beginning of the assay. The lake data indicate phosphorus limitation at all sampling times; i.e., mean inorganic nitrogen/orthophosphorus ratios were 15/1 or greater, and phosphorus limitation would be expected.

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the South Carolina National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page vi), except for the high runoff month of January when two samples were collected. Sampling was begun in February, 1973, and was completed in February, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the South Carolina District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads shown are those measured minus point-source loads, if any.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the nutrient loads at station H-1, in kg/km^2/year, and multiplying by the ZZ area in km^2.

The operators of the Belmont, Cramerton, Gastonia #1, Kings Mt., McAdenville, Mt. Holly Industrial, Ranlo, and Stanley, North Carolina, and two of the three Clover, South Carolina, wastewater treatment plants provided monthly effluent samples and corresponding flow data. However, the loadings of the two Clover plants are based on relatively few samples.

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* See Working Paper No. 175.

The operators of the Bessemer City, Dallas, and Gastonia #2, North Carolina, and Clover #3, South Carolina, wastewater treatment plants did not participate in the Survey; nutrient loads from these sources were estimated at 1.134 kg P and 3.401 kg N/capita/year, and flows were estimated at 0.3785 m^3/capita/day.

In addition to the listed point sources, a number of wastewater treatment plants located well beyond the 40-kilometer limit of the Survey* discharge to the South Fork Catawba River or its tributaries. These plants have a combined population equivalence of 25,250 (Anonymous, 1971) and include Conover (S.W. plant), Hickory (S.E. plant), Lincolnton, Longview, Maiden, and Newton (see map, page vi). Also, six unsampled point sources with a combined design flow of 2,270 m^3/day discharge to Paw Creek (Taylor, 1976).

The many municipal point sources located well upstream in the Catawba River drainage probably contribute minimal amounts of nutrients indirectly to Lake Wylie because of nutrient entrapment in the intervening reservoirs.

* See Working Paper No. 175.

A. Waste Sources:

1. Known municipal -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Belmont, NC*	6,000	ext. aer.	8,739.6	Catawba River
Bessemer City, NC	4,000	tr. filter	1,514.0	Oats Creek/ Long Creek
Clover, SC				
#1	1,000	act. sludge	393.6	Brown Creek/ Beaverdam Creek
#2	2,000	tr. filter	639.7	Calabash Creek
#3	1,000	Imhoff tank	378.5	Allison Creek
Cramerton, NC*	2,320	act. sludge	17,346.7	S. Fk. Catawba River
Dallas, NC	3,000	tr. filter	1,135.5	Dallas Br./ Long Creek
Gastonia, NC				
#1*	46,000	act. sludge	27,600.2	Catawba Creek
#2*	10,000	act. sludge	4,163.5	Long Creek
Kings Mtn., NC*	25,402	tr. filter	4,984.8	McGill Br.
McAdenville, NC*	800	cont. stab. + pond	317.9	S. Fk. Catawba River
Mount Holly, NC Indust. Plt.*	900	secondary	4,243.0	Catawba River

Four privately-owned facilities treating domestic wastes (combined flow of 490 m^3/day) discharge directly to Lake Wylie (Foley, 1976); the nutrient impact of these small sources is not known but probably is minimal.

2. Known industrial -

North Carolina industrial wastes of nutrient significance are treated in municipal facilities. Two small industrial discharges (combined flow of 49 m^3/day) are located in the South Carolina portion of the lake drainage (Foley, op. cit.) but probably are relatively insignificant.

* More than 25% of waste load is industrial.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Catawba River	64,710	14.5
S. Fk. Catawba River	174,350	39.2
Catawba Creek	9,900	2.2
Crowders Creek	1,520	0.3
Beaverdam Creek	955	0.2
Paw Creek	10,580	2.4
Allisc Creek	1,535	0.3
Little Allison Creek	475	0.1
b. Minor tributaries & immediate drainage (non-point load) -	4,115	0.9
c. Known municipal STP's -		
Belmont	37,585	8.4
Bessemer City	4,535	1.0
Clover		
#1	1,035	0.2
#2	1,905	0.4
#3	1,135	0.3
Cramerton	8,035	1.8
Dallas	3,400	0.8
Gastonia		
#1	71,495	16.1
#2	11,340	2.5
Kings Mountain	22,875	5.1
McAdenville	1,120	0.3
Mt. Holly Indust. Plt.	3,270	0.7
Ranlo	1,010	0.2
Stanley	7,115	1.6
d. Septic tanks* -	30	<0.1
e. Known industrial -	insignificant	-
f. Direct precipitation** -	930	0.2
Total	444,955	100.0

* Estimate based on 106 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

2. Outputs -

   Lake outlet - Catawba River 176,385

3. Net annual P accumulation - 268,570 kg.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/ yr	% of total
a. Tributaries (non-point load) -		
Catawba River	2,290,185	62.6
S. Fk. Catawba River	728,090	19.9
Catawba Creek	31,160	0.9
Crowders Creek	133,815	3.7
Beaverdam Creek	16,600	0.5
Paw Creek	20,240	0.6
Allison Creek	34,905	1.0
Little Allison Creek	6,705	0.2
b. Minor tributaries & immediate drainage (non-point load) -	59,825	1.6
c. Known municipal STP's -		
Belmont	23,020	0.6
Bessemer City	13,605	0.4
Clover		
#1	3,070	0.1
#2	3,760	0.1
#3	3,400	0.1
Cramerton	28,370	0.8
Dallas	10,205	0.3
Gastonia		
#1	91,885	2.5
#2	34,010	0.9
Kings Mountain	39,975	1.1
McAdenville	2,280	<0.1
Mt. Holly Indust. Plt.	9,880	0.3
Ranlo	1,710	<0.1
Stanley	15,190	0.4
d. Septic tanks* -	1,130	<0.1
e. Known industrial -	insignificant	-
f. Direct precipitation** -	57,325	1.6
Total	3,660,340	100.0

* Estimate based on 106 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

2. Outputs -

   Lake outlet - Catawba River 2,753,045

3. Net annual N accumulation - 907,295 kg.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km^2/yr	kg N/km^2/yr
Catawba River	12	431
S. Fk. Catawba River	106	444
Catawba Creek	142	446
Crowders Creek	5	474
Beaverdam Creek	19	337
Paw Creek	301	575
Allison Creek	14	307
Little Allison Creek	17	247

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m^2/yr	8.38	5.06	68.9	17.1

Vollenweider phosphorus loadings ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Lake Wylie:	
"Dangerous" (eutrophic loading)	1.56
"Permissible" (oligotrophic loading)	0.78

V. LITERATURE REVIEWED

Anonymous, 1971. Inventory of municipal waste facilities. EPA Publ. OWP-1, vol. 4, Wash., DC.

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Mast, G. Nelson, 1974. Personal communication (lake morphometry). SC Dept. of Health & Env. Contr., Columbia.

Taylor, Julian, 1974. Personal communication (wastewater treatment plant information). NC Dept. of Natural & Econ. Res., Raleigh.

_____, 1976. Personal communication (Paw Creek point sources). NC Dept. of Natural & Econ. Res., Raleigh.

Vollenweider, R. A., and P. J. Dillon, 1974. The application of the phosphorus loading concept to eutrophication research. Natl. Res. Council of Canada Publ. No. 13690, Canada Centre for Inland Waters, Burlington, Ontario.

VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	SOD-MEAN SEC	MEAN CHLORA	IS-MIN DC	MEDIAN DISS ORTHO P
4503	FISHING CREEK RESERVOIR	0.143	0.535	483.000	2.811	10.200	0.051
4504	LAKE GREENWOOD	0.061	0.470	463.917	8.150	15.000	0.011
4505	LAKE HARTWELL	0.011	0.130	422.000	6.157	15.000	0.004
4506	LAKE MARION	0.055	0.280	470.176	8.728	14.900	0.010
4507	LAKE MURRAY	0.024	0.260	424.905	6.478	15.000	0.007
4508	LAKE ROBINSON	0.014	0.260	458.778	8.611	14.000	0.005
4510	LAKE WATEREE	0.094	0.450	475.667	8.408	14.100	0.034
4511	LAKE WYLIE	0.045	0.380	462.222	5.422	14.800	0.013
4512	LAKE MOULTRIE	0.026	0.200	455.36	6.800	11.200	0.006
4513	LAKE KEOWEE	0.008	0.170	371.750	2.433	15.000	0.003
4514	LAKE SECESSION	0.057	0.355	462.778	10.722	15.000	0.006
4515	SALUDA LAKE	0.046	0.230	476.833	1.517	10.800	0.006
4516	LAKE WILLIAM C. BOWEN	0.022	0.360	459.889	3.911	15.000	0.007

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
4503	FISHING CREEK RESERVOIR	0 (0)	0 (0)	0 (0)	92 (11)	100 (12)	0 (0)	192
4504	LAKE GREENWOOD	17 (2)	8 (1)	33 (4)	42 (5)	21 (0)	25 (3)	146
4505	LAKE HARTWELL	92 (11)	100 (12)	92 (11)	58 (7)	21 (0)	92 (11)	455
4506	LAKE MARION	33 (4)	50 (6)	25 (3)	17 (2)	50 (6)	33 (4)	208
4507	LAKE MURRAY	67 (8)	62 (7)	83 (10)	50 (6)	21 (0)	46 (5)	329
4508	LAKE ROBINSON	83 (10)	62 (7)	67 (8)	25 (3)	75 (9)	83 (10)	395
4510	LAKE WATEREE	8 (1)	17 (2)	17 (2)	33 (4)	67 (8)	8 (1)	150
4511	LAKE WYLIE	50 (6)	25 (3)	50 (6)	67 (8)	58 (7)	17 (2)	267
4512	LAKE MOULTRIE	58 (7)	83 (10)	75 (9)	8 (1)	83 (10)	71 (8)	378
4513	LAKE KEOWEE	100 (12)	92 (11)	100 (12)	83 (10)	21 (0)	100 (12)	496
4514	LAKE SECESSION	25 (3)	42 (5)	42 (5)	0 (0)	21 (0)	58 (7)	188
4515	SALUDA LAKE	42 (5)	75 (9)	8 (1)	100 (12)	92 (11)	71 (8)	388
4516	LAKE WILLIAM C. BOWEN	75 (9)	33 (4)	58 (7)	75 (9)	21 (0)	46 (5)	308

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	4513	LAKE KEOWEE	496
2	4505	LAKE HARTWELL	455
3	4508	LAKE ROBINSON	395
4	4515	SALUDA LAKE	388
5	4512	LAKE MOULTRIE	378
6	4507	LAKE MURRAY	329
7	4516	LAKE WILLIAM C. BOWEN	308
8	4511	LAKE WYLIE	267
9	4506	LAKE MARION	208
10	4503	FISHING CREEK RESERVOIR	192
11	4514	LAKE SECESSION	188
12	4510	LAKE WATEREE	150
13	4504	LAKE GREENWOOD	146

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR SOUTH CAROLINA 04/27/76

LAKE CODE 4511 LAKE WYLIE

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 7821.8

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
4511A1	35.2	0.74	0.93	1.05	0.68	0.34	0.23	0.31	0.25	0.17	0.23	0.34	0.45	0.47
4511B1	5309.5	100.24	127.99	150.65	114.40	68.53	52.95	52.39	48.14	41.06	45.87	50.40	68.53	76.47
4511B2	7821.8	136.66	149.96	154.49	148.26	106.10	91.96	84.32	91.11	82.90	80.92	97.33	101.58	110.20
4511C1	1639.5	27.27	34.55	35.40	30.87	20.98	18.18	16.28	17.19	13.45	17.67	17.02	22.60	22.55
4511D1	69.9	1.50	1.84	2.07	1.39	0.68	0.45	0.62	0.51	0.34	0.45	0.68	0.91	0.95
4511E1	282.3	6.03	7.42	8.33	5.55	2.78	1.84	2.55	2.10	1.39	1.84	2.78	3.71	3.84
4511F1	49.2	1.05	1.30	1.44	0.96	0.48	0.31	0.45	0.37	0.25	0.31	0.48	0.65	0.67
4511G1	113.7	2.44	2.97	3.34	2.24	1.10	0.74	1.02	0.85	0.57	0.74	1.10	1.50	1.54
4511H1	27.2	0.59	0.71	0.79	0.54	0.25	0.17	0.25	0.20	0.14	0.17	0.25	0.37	0.37
4511ZZ	244.8	5.21	6.43	7.22	4.81	2.41	1.61	2.21	1.81	1.22	1.61	2.41	3.20	3.33

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 7821.8
SUM OF SUB-DRAINAGE AREAS = 7771.3
TOTAL FLOW IN = 1327.31
TOTAL FLOW OUT = 1325.57

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4511A1	2	73	1.472	17	1.189				
	3	73	2.067	20	0.510				
	4	73	1.586	19	0.283				
	5	73	0.198	19	0.113				
	6	73	1.189	18	0.396				
	7	73	0.227	16	0.113				
	8	73	0.198	10	0.085				
	9	73	0.198	17	0.170				
	10	73	0.283	10	0.113				
	11	73	0.198	19	0.045				
	12	73	0.283	17	0.481				
	1	74	0.765	11	0.283	26	0.623		
	2	74	1.048	12	0.538				
4511B1	2	73	132.240	17	106.471				
	3	73	202.465	20	272.974				
	4	73	172.453	19	210.961				
	5	73	171.600	19	28.317				
	6	73	121.196	18	168.485				
	7	73	116.099	16	78.154				
	8	73	113.267	10	133.939				
	9	73	92.879	17	106.188				
	10	73	48.422	10	59.465				
	11	73	66.261	19	29.166				
	12	73	92.879	17	99.109				
	1	74	127.426	11	126.010	26	90.614		
	2	74	136.487	12	175.564				

TRIBUTARY FLOW INFORMATION FOR SOUTH CAROLINA 04/27/76

LAKE CODE 4511 LAKE WYLIE

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4511B2	2	73	222.287	17	296.495				
	3	73	297.327	20	368.119				
	4	73	270.426	19	322.812				
	5	73	212.376	19	23.220				
	6	73	192.555	18	198.218				
	7	73	146.115	16	110.436				
	8	73	132.523	10	167.069				
	9	73	135.638	17	175.564				
	10	73	69.963	10	61.164				
	11	73	81.553	19	47.006				
	12	73	111.852	17	162.822				
	1	74	186.891	11	226.535	26	158.574		
	2	74	225.402	12	232.198				
4511C1	2	73	53.807	17	30.299				
	3	73	62.588	20	84.384				
	4	73	59.182	19	39.644				
	5	73	39.644	19	26.901				
	6	73	32.281	18	52.386				
	7	73	21.521	16	29.733				
	8	73	16.141	10	16.141				
	9	73	22.653	17	32.848				
	10	73	14.328	10	14.158				
	11	73	16.141	19	14.158				
	12	73	21.521	17	19.822				
	1	74	50.121	11	30.816	26	56.634		
	2	74	44.741	12	35.962				
4511D1	2	73	2.917	17	2.379				
	3	73	4.106	20	8.991				
	4	73	3.143	19	0.538				
	5	73	0.396	19	0.198				
	6	73	2.379	18	0.765				
	7	73	0.425	16	0.227				
	8	73	0.368	10	0.198				
	9	73	0.425	17	0.340				
	10	73	0.538	10	0.255				
	11	73	0.396	19	0.198				
	12	73	0.566	17	0.963				
	1	74	1.529	11	0.538	26	1.218		
	2	74	2.067	12	1.676				
4511E1	2	73	11.723	17	9.571				
	3	73	16.707	20	4.021				
	4	73	12.658	19	2.152				
	5	73	1.586	19	0.793				
	6	73	9.571	18	3.087				
	7	73	1.727	16	0.934				
	8	73	1.472	10	0.765				
	9	73	1.699	17	1.388				
	10	73	2.152	10	1.019				
	11	73	1.501	19	0.765				
	12	73	2.322	17	3.851				
	1	74	6.173	11	2.152	26	4.927		
	2	74	8.325	12	4.332				

27

LAKE CODE 4511 LAKE WYLIE

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
4511F1	2	73	2.039	17	1.671				
	3	73	2.888	20	0.708				
	4	73	2.209	19	0.368				
	5	73	0.283	19	0.142				
	6	73	1.671	18	0.538				
	7	73	0.311	16	0.170				
	8	73	0.255	10	0.142				
	9	73	0.283	17	0.255				
	10	73	0.368	10	0.170				
	11	73	0.283	19	0.142				
	12	73	0.396	17	0.680				
	1	74	1.076	11	0.368	26	0.850		
	2	74	1.444	12	0.765				
4511G1	2	73	4.729	17	3.851				
	3	73	6.711	20	1.614				
	4	73	5.097	19	0.878				
	5	73	0.623	19	0.311				
	6	73	3.851	18	1.246				
	7	73	0.708	16	0.368				
	8	73	0.595	10	0.311				
	9	73	0.680	17	0.566				
	10	73	0.878	11	0.396				
	11	73	0.651	19	0.311				
	12	73	0.934	17	1.557				
	1	74	2.492	11	0.878	26	1.982		
	2	74	3.341	12	1.727				
4511H1	2	73	1.133	17	0.934				
	3	73	1.614	20	0.396				
	4	73	1.218	19	0.198				
	5	73	0.142	19	0.085				
	6	73	0.934	18	0.283				
	7	73	0.170	16	0.085				
	8	73	0.142	10	0.085				
	9	73	0.170	17	0.142				
	10	73	0.198	11	0.085				
	11	73	0.142	19	0.085				
	12	73	0.227	17	0.368				
	1	74	0.595	11	0.198	26	0.481		
	2	74	0.793	12	0.425				
4511J7	2	73	10.194	17	8.297				
	3	73	14.442	20	3.483				
	4	73	10.959	19	1.869				
	5	73	1.359	19	0.708				
	6	73	8.297	18	2.662				
	7	73	1.501	16	0.793				
	8	73	1.274	10	0.680				
	9	73	1.472	17	1.218				
	10	73	1.869	10	0.878				
	11	73	1.642	19	0.680				
	12	73	1.982	17	3.341				
	1	74	5.352	11	1.869	26	4.276		
	2	74	7.221	12	3.738				

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/04/27

451101
35 01 08.0 081 00 35.0 3
LAKE WYLIE
45091 SOUTH CAROLINA

030891

11EPALES 2111202
0063 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/28	14 35	0000	13.6		12	70	7.50	12	0.120	0.400	0.350	0.018
	14 35	0006	13.3	9.2		70	6.80	11	0.120	0.300	0.340	0.017
	14 35	0015	13.2	9.2		65	7.40	11	0.110	0.500	0.340	0.017
	14 35	0025	13.0	9.2		65	7.50	11	0.110	0.300	0.340	0.016
	14 35	0040	12.3	9.0		65	7.50	11	0.100	0.200	0.340	0.016
	14 35	0056	12.3	9.2		65	7.50	12	0.110	0.200	0.350	0.016
73/07/12	18 00	0000	30.4	8.6	50	74	8.30	20	0.220	1.700	0.090	0.011
	18 00	0005	29.8			74						
	18 00	0012	29.2	5.5		75	6.70	18	0.130	0.300	0.100	0.005
	18 00	0015	28.6	4.2		74	6.50	18	0.130	0.200K	0.120	0.006
	18 00	0020	28.3			73						
	18 00	0030	27.4	1.5		77	6.40	20	0.150	0.300	0.190	0.006
	18 00	0040	26.3			83						
	18 00	0050	24.6			95						
	18 00	0059	24.4	0.2		98	6.60	28	0.250	0.700	0.080	0.006
73/09/20	15 35	0000	27.3	5.8	54	73	6.50	11	0.080	0.700	0.040	0.009
	15 35	0015	26.9	5.4		70	6.50	12	0.100	0.600	0.040	0.012
	15 35	0035	26.8	5.2		72	6.40	12	0.100	0.600	0.040	0.010
	15 35	0056	26.5	3.4		99	6.30	13	0.190	0.600	0.060	0.011

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/28	14 35	0000	0.070	2.5
	14 35	0006	0.058	
	14 35	0015	0.058	
	14 35	0025	0.056	
	14 35	0040	0.055	
	14 35	0056	0.061	
73/07/12	18 00	0000	0.035	5.7
	18 00	0012	0.020	
	18 00	0015	0.024	
	18 00	0030	0.024	
	18 00	0059	0.067	
73/09/20	15 35	0000	0.024	4.7
	15 35	0015	0.023	
	15 35	0035	0.023	
	15 35	0056	0.032	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

451102
35 05 08.0 081 03 35.0 3
LAKE WYLIE
45091 SOUTH CAROLINA
030891

11EPALES 2111202
0042 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/28	15 20	0000	14.3		24	70	7.50	16	0.080	0.400	0.330	0.021
	15 20	0006	13.6	9.5		70	7.50	15	0.080	0.300	0.330	0.018
	15 20	0015	13.3	9.6		70	7.50	14	0.080	0.300	0.330	0.018
	15 20	0025	13.0	9.5		70	7.50	13	0.080	0.200	0.330	0.017
	15 20	0037	12.2	8.5		90	7.40	14	0.130	0.300	0.320	0.016
73/07/12	17 30	0000	30.4		55	64	7.90	19	0.090	0.400	0.070	0.005
	17 30	0006	29.5	7.9		63	7.20	19	0.100	0.200	0.100	0.004
	17 30	0015	28.4	5.7		96	6.70	19	0.160	0.200	0.150	0.004
	17 30	0026	26.5	1.2		98	6.40	26	0.360	0.500	0.240	0.007
	17 30	0038	25.6	0.8		110	6.50	27	0.450	0.800	0.290	0.005
73/09/20	16 00	0000	27.5	6.8	48	73	6.50	13	0.060	0.700	0.050	0.011
	16 00	0015	26.6	5.8		72	6.50	11	0.090	0.400	0.050	0.012
	16 00	0028	26.5	5.6		75	6.40	15	0.100	0.600	0.050	0.012

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/28	15 20	0000	0.051	9.3
	15 20	0006	0.051	
	15 20	0015	0.056	
	15 20	0025	0.056	
	15 20	0037	0.068	
73/07/12	17 30	0000	0.026	6.2
	17 30	0006	0.029	
	17 30	0015	0.033	
	17 30	0026	0.045	
	17 30	0038	0.063	
73/09/20	16 00	0000	0.030	5.0
	16 00	0015	0.022	
	16 00	0028	0.038	

STORET RETRIEVAL DATE 76/04/27

451103
35 09 02.0 081 02 00.0 3
LAKE WYLIE
45091 SOUTH CAROLINA
030891

11EPALES 2111202
0042 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/28	16	00 0000	18.3		15	70	7.30	16	0.100	0.500	0.360	0.032
	16	00 0006	13.2	9.1		72	7.40	16	0.170	0.400	0.440	0.051
	16	00 0012	13.2	9.3		73	7.40	16	0.130	0.300	0.380	0.031
	16	00 0018	13.2	9.4		68	7.40	15	0.110	0.300	0.350	0.025
	16	00 0025	13.1	9.7		65	7.40	16	0.090	0.200	0.310	0.016
	16	00 0037	13.0	9.6		65	7.50	16	0.080	0.200	0.300	0.013
73/07/12	14	30 0000	32.5		34	66	7.00	21	0.110	0.300	0.200	0.005
	14	30 0006	30.9	8.2		64	7.10	19	0.120	0.200	0.130	0.003
	14	30 0015	27.4	4.6		61	6.50	22	0.250	0.300	0.270	0.007
	14	30 0025	27.2	4.1		63	6.40	19	0.210	0.600	0.250	0.008
	14	30 0035	26.0	1.3		77	6.50	25	0.410	1.000	0.200	0.014
73/09/20	16	25 0000	28.9	6.4	48	78	6.50	16	0.060	0.600	0.130	0.016
	16	25 0010	26.8	4.8		71	6.50	14	0.120	0.500	0.100	0.018
	16	25 0020	26.4	5.0		79	6.50	16	0.130	0.600	0.130	0.022
	16	25 0033	24.9	6.0		105	6.40	13	0.060	0.500	0.120	0.015

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/28	16	00 0000	0.075	4.0
	16	00 0006	0.120	
	16	00 0012	0.080	
	16	00 0018	0.064	
	16	00 0025	0.054	
	16	00 0037	0.043	
73/07/12	14	30 0000	0.049	5.7
	14	30 0006	0.026	
	14	30 0015	0.032	
	14	30 0025	0.037	
	14	30 0035	0.058	
73/09/20	16	25 0000	0.032	5.7
	16	25 0010	0.034	
	16	25 0020	0.045	
	16	25 0033	0.043	

STORET RETRIEVAL DATE 76/05/13

451104
35 14 12.0 081 00 45.0 3
LAKE WYLIE
37071 SOUTH CAROLINA
030891

11EPALES 2111202
0023 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/04/02	10 05	0000	13.6		12	60	7.30	11	0.090	0.200	0.290	0.006
	10 05	0006	13.3	10.0		60	7.50	11	0.080	0.200K	0.290	0.005
	10 05	0012	13.3	9.9		60	7.40	11	0.070	0.200K	0.280	0.009
73/07/12	14 00	0000	27.2			54	6.50	18	0.120	0.300	0.180	0.003
	14 00	0006	26.5	6.2		52	6.50	19	0.120	0.200K	0.180	0.003
	14 00	0012	26.4	6.0		51	6.40	20	0.110	0.200K	0.160	0.003
	14 00	0019	26.3	5.9		51	6.40	21	0.110	0.200K	0.170	0.003
73/09/20	16 45	0000	25.5	4.2	34	100	6.30	11	0.120	0.600	0.100	0.006
	16 45	0015	25.1	1.8		116	6.30	12	0.150	0.700	0.100	0.006

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/04/02	10 05	0000	0.045	
	10 05	0006	0.042	
	10 05	0012	0.058	
73/07/12	14 00	0000	0.020	3.3
	14 00	0006	0.016	
	14 00	0012	0.023	
	14 00	0019	0.023	
73/09/20	16 45	0000	0.027	3.2
	16 45	0015	0.032	

K VALUE KNOWN TO BE
LESS THAN INDICATED

APPENDIX E

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/04/27

4511A1 37X1A1
35 14 00.0 081 01 00.0 4
PAW CREEK (NC)
45 MECKLENBURG CO M
T/CATAWBA LAKE 030891
BRDG ON RD 3 MI SW OF DOUGLAS AIRFIELD
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	12	15	0.350	0.190	0.075	0.088	0.160
73/03/20	10	40	0.250	0.640	0.028	0.013	0.145
73/04/19	10	00	0.231	0.240	0.048	0.231	0.315
73/05/19	10	50	0.336	1.050	0.120	0.340	0.460
73/06/18	14	45	0.750	1.320	0.147	0.394	0.540
73/07/16	10	35	0.470	0.540	0.170	0.710	0.840
73/08/10			1.260	0.690	0.118	0.910	1.150
73/09/17	11	20	0.590	0.500	0.120	0.850	1.050
73/10/10	11	10	1.300	0.800	0.140	1.450	1.720
73/11/19	10	30	2.100	0.700	0.144	1.400	1.700
73/12/17	10	55	0.900	0.500	0.140	0.440	0.610
74/01/11			0.540	0.600	0.072	0.350	0.630
74/01/26	10	45	0.300	0.500	0.052	0.072	0.180
74/02/12	10	30	0.640	0.400	0.085	0.170	0.250

STORET RETRIEVAL DATE 76/04/27

451181 37X181
35 15 30.0 081 01 00.0 4
CATAWBA RIVER (NC)
45 GASTON CO HWY MA
I/CATAWBA LAKE 030891
US HWY 85 BRDG E OF N BELMONT
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	12 00		0.220	0.190	0.048	0.013	0.020
73/03/20	10 15		0.290	0.460	0.091		0.030
73/04/19	09 45		0.231	0.265	0.032	0.010	0.035
73/05/19	10 30		0.210	0.790	0.035	0.013	0.035
73/06/18	14 30		0.231	1.150	0.096	0.007	0.052
73/07/16	10 25		0.126	0.200	0.053	0.009	0.022
73/08/10	10 00		0.066	0.260	0.046	0.005K	0.025
73/09/17	11 00		0.071	0.330	0.075	0.005K	0.025
73/10/10	10 55		0.065	0.500	0.100	0.013	0.022
73/11/19	10 15		0.100	1.800	0.136	0.008	0.025
73/12/17	10 40		0.192	0.500	0.052	0.012	0.030
74/01/11	10 30		0.264	0.450	0.044	0.016	0.027
74/01/26	10 35		0.252	0.900	0.072	0.020	
74/02/12	10 20		0.320	3.100	0.130	0.010	0.025

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

451182
35 03 00.0 081 00 30.0 4
CATAWBA RIVER
45 YORK CO HWY MAP
0/CATAWBA LAKE 030891
BANK ON W SIDE AT END OF CO RT 30
11ŁPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	12 45		0.240	0.390	0.084	0.042	0.091
73/03/20	11 00		0.290	0.500	0.100	0.040	0.095
73/04/19	10 30		0.270	0.260	0.056	0.029	0.060
73/05/19	11 30		0.138	0.830	0.061	0.008	0.035
73/06/18	15 20		0.120	0.400	0.084	0.020	0.040
73/07/16	11 15		0.110	0.400	0.176	0.009	0.025
73/08/10			0.054	0.370	0.115	0.022	0.027
73/09/17	11 50		0.035	0.580	0.132	0.008	0.030
73/10/10	11 45		0.080	0.380	0.138	0.021	0.025
73/11/19	11 00		0.208	0.650	0.100	0.024	0.035
73/12/17	11 30		0.224	0.700	0.088	0.040	0.075
74/01/11	17 25		0.330	0.900	0.068	0.040	0.070
74/01/26	11 15		0.368	1.800	0.288	0.032	0.060
74/02/12	11 15		0.380	0.300	0.055	0.035	0.060

STORET RETRIEVAL DATE 76/04/27

4511C1 37X1C1
35 16 00.0 081 04 00.0 4
S FORK CATAWBA RIVER (NC)
45 GASTON CO HWY NA
T/CATAWBA LAKE 030891
BRDG ON US 85 JUST E OF LOWELL
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	11 30		0.400	0.370	0.120	0.092	0.150
73/03/20	10 45		0.390	0.500	0.074	0.066	0.160
73/04/19	09 30		0.399	0.340	0.075	0.110	0.175
73/05/19	10 15		0.370	1.100	0.096	0.139	0.210
73/06/18	14 10		0.490		0.154	0.090	0.260
73/07/16	10 05		0.640	0.620	0.080	0.110	0.460
73/08/10			0.640	0.420	0.063	0.154	0.300
73/09/17	10 40		0.530	0.500	0.110	0.320	0.450
73/10/10	10 40		0.930	0.750	0.220	0.273	0.383
73/11/19	10 05		0.460	1.050	0.552	0.380	0.480
73/12/17	10 30		0.450	0.500	0.076	0.184	0.270
74/01/11	10 15		0.420	0.600	0.104	0.020	0.220
74/01/26	10 20		0.430	1.100	0.168	0.052	0.360
74/02/12	10 05		0.504	0.500	0.070	0.090	0.188

STORET RETRIEVAL DATE 76/04/27

4511D1 37X1D1
35 11 30.0 081 05 00.0 4
CATAWBA CREEK (NC)
45 GASTON CO HWY MA
T/CATAWBA LAKE 030891
BRDG ON RD 2 MI S OF CRAMERTON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	11	10	0.980	1.680	0.760	2.000	2.200
73/03/20	10	30	0.780	1.300	0.160	0.530	0.730
73/04/19	09	15	1.020	2.400	1.260	2.000	2.200
73/05/19	09	50	2.450	2.510	1.440	3.400	3.700
73/06/18	13	50	2.300	1.540	0.115	1.120	1.450
73/07/16	09	45	3.000	1.200	0.066	2.900	3.150
73/08/10			2.200	1.300	0.115	3.525	3.900
73/09/17	10	20	3.300	1.100	0.082	3.425	3.800
73/10/10	10	20	4.300	2.300	0.273	4.200	4.700
73/11/19	09	50	2.520	2.100	0.470	3.700	4.100
73/12/17	10	05	3.520	1.375	0.072	2.760	2.840
74/01/11	10	00	4.200	1.100	0.064	1.800	2.100
74/01/26	10	05	0.990	1.200	0.076	0.540	0.810
74/02/12	09	45	1.900	2.200	0.270	1.150	1.800

STORET RETRIEVAL DATE 76/04/27

4511E1
35 07 30.0 081 07 00.0 4
CROWDERS CREEK
45 YORK CO HWY MAP
T/CATAWBA LAKE 030891
BRDG ON RT 557 6 MI E OF CLOVER
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	10 30		0.290	0.630	0.280	0.058	0.155
73/03/20	10 15		0.231	0.990	0.189	0.038	0.250
73/04/19			0.410	0.620	0.270	0.100	0.230
73/05/19	09 40		0.480	1.000	0.085	0.066	0.120
73/06/18	13 40		0.490	0.600	0.068	0.055	0.235
73/07/16	09 25		0.680	0.720	0.294	0.075	0.185
73/08/10			0.800	0.690	0.252	0.091	0.185
73/09/17	10 05		0.910	0.960	0.380	0.075	0.260
73/10/10	09 50		1.020	1.260	0.430	0.120	0.250
73/11/19	09 40		0.570	0.800	0.400	0.100	0.190
73/12/17	09 45		0.470	1.100	0.440	0.112	0.240
74/01/11	09 45		0.352	0.700	0.124	0.028	0.130
74/01/26	09 50		0.312	1.500	0.305	0.058	
74/02/12	09 30		0.420	0.800	0.190	0.040	0.140

40

STORET RETRIEVAL DATE 76/04/27

4511F1
37 07 00.0 081 07 00.0 4
BEAVERDAM CREEK
45 YORK CO HWY MAP
T/CATAWBA LAKE 050791
RD BRDG 6 MI E OF CLOVER
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	10 15		0.470	0.150	0.089	0.027	0.050
73/03/20	10 05		0.300	1.380	0.056	0.027	0.080
73/04/19	08 50		0.400	0.200	0.021	0.027	0.055
73/05/19	09 30		0.510	0.190	0.021	0.058	0.080
73/06/18	13 35		0.470	0.390	0.022	0.075	0.100
73/07/16	09 50		0.480	0.200	0.031	0.065	0.105
73/08/10			0.500	0.230	0.027	0.060	0.100
73/09/17	10 00		0.450	0.300	0.021	0.065	0.110
73/10/10	09 45		0.430	0.420	0.069	0.079	0.120
73/11/19	09 30		0.410	0.575	0.080	0.064	0.095
73/12/17	09 40		0.588	0.600	0.100	0.040	0.075
74/01/11	09 40		0.540	0.600	0.064	0.040	0.070
74/01/26	09 45		0.320	0.900	0.068	0.044	0.135
74/02/12	09 25		0.552		0.250	0.055	0.125

STORET RETRIEVAL DATE 76/04/27

451161
35 05 30.0 081 07 30.0 4
ALLISON CREEK
45 YORK CO HWY MAP
T/CATAWBA LAKE 030891
SC RT 49 BRDG 6.5 MI ESE OF CLOVER
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	09 50		0.260	0.160	0.056	0.024	0.065
73/03/20	10 00		0.240	0.650	0.069	0.031	0.120
73/04/19	08 35		0.210	0.270	0.017	0.023	0.060
73/05/19	09 10		0.290	0.210	0.020	0.044	0.075
73/06/18	13 25		0.300	1.150	0.019	0.042	0.090
73/07/16	09 05		0.294	0.150	0.029	0.044	0.095
73/08/10			0.360	0.230	0.019	0.050	0.095
73/09/17	09 45		0.300	0.280	0.024	0.046	0.095
73/10/11	09 30		0.340	1.890	0.138	0.052	0.090
73/11/19	09 15		0.288	0.200	0.032	0.060	0.130
73/12/17	09 23		0.330	0.800	0.092	0.028	0.085
74/01/11	09 25		0.288	0.400	0.042	0.032	0.070
74/01/26	09 30		0.240	1.200	0.052	0.032	0.165
74/02/12	09 10		0.306	0.300	0.040	0.017	0.060

STORET RETRIEVAL DATE 76/04/27

4511M1
35 02 00.0 081 06 30.0 4
LITTLE ALLISON CREEK
45 YORK CO HWY MAP
T/CATAWBA LAKE 030891
RT 274 BRDG 8.5 MI SE OF CLOVER
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/02/17	09 35		0.168	0.100K	0.020	0.014	0.035
73/03/20	09 45		0.115	0.440	0.027	0.021	0.060
73/04/19	08 25		0.091	0.180	0.040	0.013	0.030
73/05/19	09 00		0.280	0.240	0.033	0.018	0.030
73/06/18	13 15		0.190	0.700	0.052	0.033	0.055
73/07/16			0.200	0.110	0.017	0.023	0.045
73/08/10	08 40		0.280	0.220	0.018	0.022	0.045
73/09/17	09 30		0.200	0.230	0.012	0.023	0.045
73/10/11	09 15		0.151	0.480	0.115	0.016	0.035
73/11/19	09 00		0.028	0.100K	0.016	0.012	0.012
73/12/17	09 15		0.176	0.600	0.036	0.016	0.030
74/01/11	09 15		0.192	0.200	0.020	0.016	0.025
74/01/26	09 10		0.132	1.000	0.032	0.024	0.090
74/02/12	09 00		0.252	0.900	0.065	0.020	0.025

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

45118A PD45118A P006000*
35 15 00.0 081 01 00.0 4
BELMONT NC
45 GASTON CO HWY MA
T/LAKE CATAWBA 030891
CATAWBA RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/09	06 00								
CP(T)-			7.000	2.600	0.345	10.800	11.000	2.300	2.300
73/05/09	22 00								
73/06/12	06 00								
CP(T)-			6.000	1.600	0.600	10.000	12.500	2.250	2.500
73/06/12	22 00								
73/07/11	06 00								
CP(T)-			10.000	2.000	0.250	9.600	11.000	3.000	2.000
73/07/11	20 00								
73/08/17	06 00								
CP(T)-			1.400	6.400	2.560	0.062		2.500	2.300
73/08/17	18 00								
73/09/12	06 00								
CP(T)-			4.540	2.600	0.140	9.900	9.900	2.000	2.300
73/09/12	20 00								
73/10/11	06 00								
CP(T)-			6.100	1.300	0.037	9.925	10.270	3.000	2.500
73/10/11	20 00								
73/11/14	06 00								
CP(T)-			0.120	8.900	0.510	14.250	16.000	2.500	2.500
73/11/14	20 00								
73/12/14	06 00								
CP(T)-			2.400	5.200	0.120	12.600	12.600	2.500	2.300
73/12/14	06 00								
74/01/17	12 00								
CP(T)-			1.760	2.500	0.240	10.100	10.100	2.500	2.100
74/01/18	12 00								
74/02/14	06 00								
CP(T)-			0.720	1.600	0.230	12.000	12.000	2.500	2.300
74/02/15	06 00								
74/03/13	06 00								
CP(T)-			0.280	2.700	0.082	12.550	12.600	2.000	2.300
74/03/14	06 00								

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STORET RETRIEVAL DATE 76/04/27

451188 N0451188 P000900
35 18 00.0 081 01 03.0 4
MOUNT HOLLY INDUSTRIAL PLANT
45 250 CHARLOTTE
T/LAKE WYLIE 030891
CATAWBA RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/15	14	00	5.800	2.500	0.053	2.830	3.100	1.260	1.130
73/07/13	07	00							
CP(T)-			4.100	2.100	0.070	2.900	3.000	1.530	1.110
73/07/13	..	00							
73/08/09	09	00							
CP(T)-			6.100	3.000	0.302	2.600	2.800	1.330	0.803
73/08/09	16	00							
73/09/14	06	00							
CP(T)-			5.000	1.300	0.072	2.000	2.000	1.800	1.040
73/09/14	13	00							
73/10/12	06	00							
CP(T)-			4.100	1.000	0.480	2.025	2.075	1.710	1.160
73/10/12	13	00							
73/11/16	06	00							
CP(T)-			3.000	1.900	0.061	1.785	1.957	1.640	1.280
73/11/16	13	00							
73/12/1	06	00							
CP(T)-			4.400	3.000	0.030	2.310	2.600	1.870	1.250
73/12/14	1	00							
74/01/18	06	00							
CP(T)-			3.360	2.700	0.059	1.600	1.750	1.310	1.010
74/01/18	13	00							
74/02/15	06	00							
CP(T)-			1.640	1.600	0.040R	1.160	1.200	1.530	1.150
74/02/15	13	00							
74/03/15	06	00							
CP(T)-			5.400	1.000	0.050R	1.400	1.425	1.260	1.180
74/03/15	13	00							
74/04/18	06	00							
CP(T)-			5.040	1.600	0.050R	2.000	2.200	1.620	1.050
74/04/18	13	00							
74/05/16	06	00							
CP(T)-			5.520	3.600	0.100	1.550	1.800	1.830	1.180
74/05/16	13	00							
74/06/14	06	00							
CP(T)-			3.360	1.300	0.06R	1.500	1.700	1.910	1.230
74/06/.4	13	00							

R VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

4511CA AS4511CA P000800*
35 16 30.0 081 05 00.0 4
MCADENVILLE NC
45 GASTON CO HWY MA
T/CATAWBA LAKE 030891
S FORK CATAWBA RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/07/02			14.000	6.000	0.250	9.510	11.000	0.080	0.085
73/08/12			4.600	2.100	0.370	3.200	9.800	0.080	0.080
73/09/18	15 00		6.600	4.600	0.640	9.500	10.600	0.083	0.080
73/10/02	00 00								
CP(T)-			15.000	1.450	0.360	7.500	7.500	0.083	0.087
73/10/02	12 00								
73/11/27	14 00		13.200	8.400	1.300	8.500	10.000	0.080	0.083
74/01/03			9.000	8.100	0.480	4.200	6.600	0.085	0.088
74/02/01	11 00		6.400	16.000	3.840	7.200	10.500	0.089	0.085
74/03/07	17 00		16.000	8.200	1.850	8.600	10.500	0.079	0.082
74/04/24	15 00		18.000	7.400	1.300	8.100	10.000	0.085	0.088
74/05/01	15 00		18.500	13.000	2.500	9.300	11.000	0.075	0.082
74/06/04	16 00		13.000	6.800	0.390	7.800	8.600	0.075	0.085

STORET RETRIEVAL DATE 76/04/27

4511CB AS4511CB P069615
35 14 00.0 081 04 30.0 4
CRAMERTON NC
45 GASTON CO HWY MA
T/CATAWBA LAKE 030891
S FORK CATAWBA RIVER
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/14			0.080	7.100	0.640	0.710	1.350	4.500	4.000
73/07/05	08	15	0.050	5.400	0.021	0.850	1.650	4.700	4.500
73/08/09	08	00	0.070	4.100	0.057	0.390	1.300	5.100	4.500
73/09/06	08	00		6.200	0.105	0.960	1.400	4.400	4.500
73/10/02	08	30	0.270	4.200	0.081	1.000	1.350	4.300	4.200
73/11/01	07	30	0.080	4.500	0.130	0.680	1.200	4.800	4.400
73/12/11	08	30	0.080	4.650	0.019	0.700	1.500	4.400	4.500
74/01/01	08	10	0.360	4.300	0.040K	0.890	1.650	4.000	4.500
74/02/06	13	30	0.040	3.500	0.040K	0.210	0.680	5.700	4.900
74/03/06	08	30	0.120	3.600	0.075	0.760	1.150	5.400	5.200
74/04/02	08	30	0.160	3.200	0.050K	0.970	1.450	5.000	4.900
74/05/01	07	00	0.080	3.500	0.090	0.490	0.813	5.200	4.900

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/04/27

45111DA AS45111DA P046000*
34 1J 30.0 081 08 00.0 4
GASTONIA NC
45 GASTON CO HWY MA
T/CATAWBA LAKE 030891
CATAWBA CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/09	09 30		4.200	2.700	0.051	7.140	7.500	8.000	8.500
73/06/19	09 30		5.200	2.400	0.026	8.200	8.800	8.790	8.610
73/07/24	16 45		11.400	0.540	0.170	6.600	7.200	7.000	7.500
73/09/19	10 30		6.200	2.300	0.120	7.100	7.100	7.980	7.600
73/10/23	11 45		7.900	2.200	0.060	8.250	8.625	7.800	7.080
74/01/29	09 00		5.280	2.700	0.072	4.500	6.800	7.360	6.400
74/02/01	14 00		7.400	2.800	0.080	6.000	6.400	7.680	6.500
74/03/05	14 30		5.880	6.500	0.220	5.700	6.300	7.500	7.200
74/04/30	09 30		5.700	5.400	0.092	6.300	7.500	7.700	7.000
74/05/17	10 30		5.400	2.800	0.150	6.100	6.900	7.600	6.900
74/06/13	09 30		7.000	2.400	0.057	6.200	6.200	7.300	7.200
74/07/25	09 45		5.400	2.200	0.190	5.600	6.300	8.100	6.600
74/09/09	14 30		15.000	2.400	0.140	5.700	6.350	8.400	7.700

STORET RETRIEVAL DATE 76/04/27

4511KA PR4511KA P025402
34 59 30.0 081 21 00.0 4
MCGILL CR KINGS MTN NC
45 CLEVELAND CO NC
T/CATAWBA RES 030891
MCGILL BR
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/14	08 00								
CP(T)-			0.155	33.000	15.400	12.400	14.000	1.430	1.500
73/05/14	15 00								
73/06/14			0.105	25.000	6.900	11.000	13.000	1.270	1.300
73/07/13			0.370	24.000	5.100	9.700	11.000	1.200	1.450
73/08/14	08 00								
CP(T)-			0.110	16.800	1.600	2.310	7.300	1.320	1.450
73/08/14	16 00								
73/09/14	00 00								
CP(T)-			0.037	12.400	2.420	8.600	9.200	1.600	1.500
73/09/14	08 00								
73/10/15	07 30								
CP(T)-			0.078	39.000	3.500	5.500	10.500	1.250	1.300
73/10/15	16 00								
73/11/14	08 00								
CP(T)-			0.100	13.000	0.740	8.600	10.000	1.120	1.100
73/11/14	16 00								
73/12/14	08 00								
CP(T)-			0.070	17.000	3.200	14.000	16.000	4.500	1.300
73/12/14	16 00								
74/01/14	00 00								
CP(T)-			16.000	2.600	0.320	7.200	7.850	1.170	1.200
74/01/14	08 00								
74/02/14	08 30								
CP(T)-			0.400	20.000	3.840	7.300	8.800	1.380	1.400
74/02/14	15 00								
74/03/14			0.040	23.000			11.000	0.956	1.000
74/05/15	08 30		9.300	26.000	6.100	9.450	17.000	1.100	1.300

STORET RETRIEVAL DATE 76/04/27

4511WA TF4511WA P000600*
35 17 55.0 081 07 35.0 4
RANLO
45 250 CHARLOTTE
T/LAKE WYLIE 030891
LONG CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/08/14			1.150	3.300	0.720	1.600	4.400	0.050	0.050
73/09/22			8.200	6.600	3.970	6.000	7.200	0.060	0.075
73/10/17	00 00		21.200	6.600	3.100	15.600	17.600	0.090	0.085
73/11/28	12 00		20.800	3.900	0.110	10.200	10.500	0.083	0.085
74/01/14	16 00		2.900	7.100	1.800	2.300	3.600	0.075	0.090
74/02/04	16 00		0.520	4.500	1.480	1.280	2.800	0.070	0.085
74/03/18	15 00			30.000	14.500	12.130	14.500	0.075	0.082

STORET RETRIEVAL DATE 76/04/27

4511XA AS4511XA P001000
35 13 15.0 081 22 05.0 4
CLOVER #1
45 15 CLOVER
17CATAWBA LAKE 030891
BROWN CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/12	00	00							
CP(T)-			0.078	18.900	2.960	3.100	6.200		
73/06/12	08	00							
73/07/12	07	00							
CP(T)-			0.230	25.600	7.900	5.200	10.500		
73/07/12	17	00							
73/09/18	08	00							
CP(T)-			0.046	18.000	6.250	6.220	9.100		
73/09/18	17	00							
73/10/12	08	00							
CP(T)-			3.100	24.000	7.300	7.800	10.500	0.090	0.237
73/10/12	17	00							
73/11/12	08	00							
CP(T)-			0.270	27.000	7.800	6.200	9.000	0.050	0.050
73/11/12	16	00							
73/12/26	08	00							
CP(T)-			0.630	27.000	5.900	3.500	7.350	0.080	0.080
73/12/26	17	00							
74/01/14	08	00							
CP(T)-			1.160	12.500	2.200	2.080	5.200	0.080	0.075
74/01/14	17	00							
74/02/14	08	00							
CP(T)-			1.160	11.000	2.270	1.960	4.130	0.080	0.040
74/02/14	17	00							

STORET RETRIEVAL DATE 76/04/27

4511YA TF4511YA P002800
35 06 23.0 081 20 25.0 4
CLOVER #2
45 15 CLOVER
T/CATAWBA LAKE 030891
CALABASH CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/12 00 00 CP(T)- 73/06/12 08 00			1.400	10.500	5.020	4.220	5.000		
73/07/12 07 00 CP(T)- 73/07/12 17 00			0.440	12.000	4.400	8.900	9.700		
73/09/18 08 00 CP(T)- 73/09/18 17 00			0.880	8.700	4.600	7.620	8.600		
73/10/12 08 00 CP(T)- 73/10/12 17 00			0.070	27.000	15.800	10.400	12.000	0.200	0.200
73/11/12 08 00 CP(T)- 73/11/12 16 00			0.130	24.000	10.000	12.000	12.500	0.075	0.075
73/12/26 08 00 CP(T)- 73/12/26 17 00			1.000		4.800	4.100		0.200	0.175
74/01/14 08 00 CP(T)- 74/01/14 17 00			0.880	8.500	3.840	5.040	6.400	0.200	0.200
74/02/14 08 00 CP(T)- 74/02/14 17 00			2.520	6.400	2.520	3.100	4.500	0.290	0.200

52

STORET RETRIEVAL DATE 76/04/27

45111ZA AS45111ZA P002300*
35 20 50.0 081 05 57.0 4
STANLEY
45 250 CHARLOTTE
T/LAKE WYLIE 030891
MAUNEY CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/12/13	11 30		9.800	6.800	0.200	6.600	7.900	0.650	0.650
74/01/03	11 30		9.000	4.950	0.080	5.300	5.700	0.630	0.650
74/01/25	09 30		12.600	5.600	0.130	7.700	8.100	0.650	0.650
74/02/14	13 20		3.680	8.600	2.400	4.600	7.200	0.640	0.650
74/03/08	09 00		1.400	13.000	3.300	6.800	9.100	0.640	0.650
74/03/28	11 10		7.800	8.400	0.470	5.000	7.700	0.630	0.650
74/04/18	08 30		11.000	5.000	0.260	4.500	6.500	0.640	0.650
74/05/09	11 00		10.600	7.550	0.410	6.100	7.800	0.650	0.650
74/06/03	14 15		14.000	7.800	1.200	8.500	10.000	0.650	0.650
74/06/21	09 45		11.800	6.200	0.100	7.450	8.800	0.860	0.650
74/07/29	13 35		11.800	4.300	0.270	6.100	7.000	0.750	0.650
74/08/01	13 40		10.100	4.000	0.091	6.600	7.700	1.100	0.750
74/08/21	09 15		10.900	7.000	0.050K	5.200	6.700	1.000	0.800

K VALUE KNOWN TO BE
LESS THAN INDICATED